Arizona State Science Standards (Grades 4-8 and High School) satisfied by the Desert Tortoise Tracking Program.

Grade 4

Strand 1

Concept 1: Observations, Questions, and Hypotheses

Observe, ask questions, and make predictions.

PO 1. Differentiate inferences from observations.

PO 2. Formulate a relevant question through observations that can be tested by an investigation.
(See M04-S2C1-01)

PO 3. Formulate predictions in the realm of science based on observed cause and effect relationships.

Concept 2: Scientific Testing (Investigating and Modeling)

Participate in planning and conducting investigations, and recording data.

PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.

PO 2. Plan a simple investigation that identifies the variables to be controlled.

PO 3. Conduct controlled investigations (e.g., related to erosion, plant life cycles, weather, magnetism) in life, physical, and Earth and space sciences.

PO 4. Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).
(See M04-S4C4-03 and M04-S4C4-07)

PO 5. Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).
(See W04-S3C2-01 and W04-S3C3-01)

Concept 3: Analysis and Conclusions

Organize and analyze data; compare to predictions.

PO 1. Analyze data obtained in a scientific investigation to identify trends.
(See M04-S2C1-03)

PO 2. Formulate conclusions based upon identified trends in data.
(See M04-S2C1-03)

PO 3. Determine that data collected is consistent with the formulated question.

PO 4. Determine whether the data supports the prediction for an investigation.

PO 5. Develop new questions and predictions based upon the data collected in the investigation.

Concept 4: Communication
Communicate results of investigations.

PO 1. Communicate verbally or in writing the results of an inquiry.
(See W04-S3C3-01)

PO 3. Communicate with other groups or individuals to compare the results of a common investigation.

Strand 2

Concept 1: History of Science as a Human Endeavor
Identify individual and cultural contributions to scientific knowledge.

PO 2. Describe science-related career opportunities.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

PO 1. Explain the role of experimentation in scientific inquiry.

PO 2. Describe the interaction of components in a system (e.g., flashlight, radio).

PO 3. Explain various ways scientists generate ideas (e.g., observation, experiment, collaboration, theoretical and mathematical models).

Strand 3

Concept 1: Changes in Environments
Describe the interactions between human populations, natural hazards, and the environment.

PO 1. Describe how natural events and human activities have positive and negative impacts on environments (e.g., fire, floods, pollution, dams).

PO 2. Evaluate the consequences of environmental occurrences that happen either rapidly (e.g., fire, flood, tornado) or over a long period of time (e.g., drought, melting ice caps, the greenhouse effect, erosion).

Concept 2: Science and Technology in Society
Understand the impact of technology.

PO 1. Describe how science and technology (e.g., computers, air conditioning, medicine) have improved the lives of many people.

PO 3. Design and construct a technological solution to a common problem or need using common materials.

Strand 4

Concept 1: Characteristics of Organisms

Understand that basic structures in plants and animals serve a function.

PO 1. Compare structures in plants (e.g., roots, stems, leaves, flowers) and animals (e.g., muscles, bones, nerves) that serve different functions in growth and survival.

PO 2. Classify animals by identifiable group characteristics:

- vertebrates – mammals, birds, fish, reptiles, amphibians
- invertebrates – insects, arachnids

Concept 2: Life Cycles

Understand the life cycles of plants and animals.

No performance objectives at this grade level

Concept 3: Organisms and Environments

Understand the relationships among various organisms and their environment.

PO 1. Describe ways various resources (e.g., air, water, plants, animals, soil) are utilized to meet the needs of a population.

PO 2. Differentiate renewable resources from nonrenewable resources.

PO 3. Analyze the effect that limited resources (e.g., natural gas, minerals) may have on an environment.

PO 4. Describe ways in which resources can be conserved (e.g., by reducing, reusing, recycling, finding substitutes).

Concept 4: Diversity, Adaptation, and Behavior

Identify plant and animal adaptations.

PO 1. Recognize that successful characteristics of populations are inherited traits that are favorable in a particular environment.

PO 2. Give examples of adaptations that allow plants and animals to survive.

- camouflage – horned lizards, coyotes
- mimicry – Monarch and Viceroy butterflies
- physical – cactus spines
- mutualism – species of acacia that harbor ants, which repel other harmful insects

Strand 6

Concept 2: Earth's Processes and Systems

Understand the processes acting on the Earth and their interaction with the Earth systems.

PO 1. Identify the Earth processes that cause erosion.

PO 2. Describe how currents and wind cause erosion and land changes.

PO 3. Describe the role that water plays in the following processes that alter the Earth's surface features:

- erosion
- deposition
- weathering

PO 4. Compare rapid and slow processes that change the Earth's surface, including:

- rapid – earthquakes, volcanoes, floods
- slow – wind, weathering

PO 5. Identify the Earth events that cause changes in atmospheric conditions (e.g., volcanic eruptions, forest fires).

PO 6. Analyze evidence that indicates life and environmental conditions have changed (e.g., tree rings, fish fossils in desert regions, ice cores).

Concept 3: Changes in the Earth and Sky

Understand characteristics of weather conditions and climate.

PO 1. Identify the sources of water within an environment (e.g., ground water, surface water, atmospheric water, glaciers).

PO 2. Describe the distribution of water on the Earth's surface.

PO 3. Differentiate between weather and climate as they relate to the southwestern United States.

PO 4. Measure changes in weather (e.g., precipitation, wind speed, barometric pressure).